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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/016,807	11/01/2001	David J. Edlund	NPW 320	6085

7590 06/28/2006

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EXAMINER

BHAT, NINA

ART UNIT	PAPER NUMBER
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1764

DATE MAILED: 06/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/016,807

Applicant(s)

EDLUND, DAVID J.

Examiner

N. Bhat

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 April 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-86 is/are pending in the application.
- 4a) Of the above claim(s) 18,23,28-34,59,66-71 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18,20-22,24-27,35-47,49-58,60-64 and 79-86 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-86 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 March 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. Applicant's arguments and amendments of 4-17-2006 have been fully and carefully considered. Applicant has argued that the claims have been amended so that the odor of the instant invention has a different composition than the carbon containing feedstuff; the odorant imparts the feed stream and odor distinct from the carbon containing feedstock and is at least substantially free from sulfur compounds. The examiner recognizes what applicant is claiming and withdraws the 102(b) rejections over Collins GB 2,283,235 and Holland et al. USP 6,572,837. However, for reason which will be delineated below the claims remain unpatentable under obviousness over the Collins or Holland et al. references.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 1-17, 20-22, 24-27, 35-47, 49-58, 60-65 and 79-86 are rejected under 35 U.S.C. 103(a) as being unpatentable over Collins. GB 2,283,235.

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Collins teaches the invention substantially as claimed.

Collins teaches a fuel processing system which includes a combined reformer and hydrogen separator which is supplied with methanol from a supply tank. The fuel processing system converts a hydrocarbon containing material into a hydrogen rich gas stream and purifies the hydrogen rich gas stream to a level where it suitable to be supplied to a solid polymer fuel cell without poisoning the fuel cell. The fuel processing system comprises a hydrogen separator which is a selectively permeable membrane. Specifically, a supply of hydrocarbon containing material (12) which can be methanol, a supply of water and a supply of oxygen are provided. The hydrocarbon containing material is supplied to a mixer (22) and the water is supplied to the mixer (22) where the water and the hydrocarbon material is mixed and then supplied to a heat exchanger which is connected to a reformer(32) which is a combined autothermal reformer and hydrogen separator. In the reformer the hydrocarbon containing material catalytically reacts and the hydrogen from reaction is selectively removed through the separator.

However, Collins does not disclose whether the hydrocarbon containing feedstock includes an odorant specifically and odorant which has been claimed by applicant.

It would have been obvious from reading Collins that the apparatus is fully capable of treating a hydrocarbon containing gas which may or may not include an odorant. The apparatus of Collins includes at least one reforming catalyst bed within the fuel processor which produces a mixed gas stream containing hydrogen gas and other gases from the feed stream and a separation region within the fuel process to

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received the gas stream and separate the mixed gas stream into a hydrogen rich stream containing at least substantially hydrogen gas and a byproduct stream containing at least a substantially portion of the other gases and wherein the product hydrogen stream is formed from the hydrogen rich stream. Collins recognizes that mercaptans and sulfur containing compounds found in conventional hydrocarbon streams which are to be reformed need to include separation means or sulfur removal means in order to prevent poisoning of either the catalyst or fuel cell. Applicant is reminded that the examiner reads the claims given its broadest most reasonable interpretation. Applicant is reminded that in claim construction, especially when claiming an apparatus the intended feature of the fuel containing a odorant is not different than any other fuel, because as written the fuel processor is "adapted to produce a hydrogen stream containing hydrogen gas from a feed stream containing a carbon containing feedstock, water and an odorant. It is immaterial to the apparatus whether what type of fuel is being used, and whether the fuel contains an odorant as claimed. Applicant must specifically recites a supply of carbon containing feedstock including an d odorant which has a different composition than the carbon containing feeds, which imparts an odor distinct form the carbon containing feedstock and is at least substantially free from sulfur compounds said supply is fluidly connected to at least one reforming catalyst, etc. The claim as written with the "adapted to" language is interpreted more broadly and therefore although Collins does not include and odorant per se, the apparatus functions equivalently to what has been claimed by applicant and the apparatus is fully capable of providing a hydrogen stream which includes a carbon

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containing feedstock not precluding an odorant which imparts a odor or smell distinct from the feedstock. It is maintained that applicant apparatus as claimed is rendered as a whole obvious from the teachings of Collins et al.

4. Claims 1-17, 20-22, 24-27, 35-47, 49-58, 60-65 and 79-86 are rejected under 35 U.S.C. 103(a) as being unpatentable over Holland et al. USP 6,572,837

Holland et al. teach the invention substantially as claimed. Holland et al. teach a method and apparatus for processing a hydrocarbon fuel which includes a fuel process reactor for converting a feed stream into a reformat stream comprising hydrogen, a hydrogen separator located downstream of the primary fuel processing reactor which is fluidly connected to the first reformat stream. The hydrogen separator is a membrane separator which separates the reformat stream into a first hydrogen rich stream and a first retentant stream. A second fuel processing reactor is fluidly connected to the separator for receiving and converting the first retenate stream to a second refomate stream wherein the hyrogen is separated in a second membrane into hydrogen, the hydrogen is used in a fuel cell. [Note Column 3,lines 54 to Column 5, line 3] Holland teaches that carbon containing fuels which can be used include gasoline, diesel, natural gas, ethane, butane, light distillates, dimethyl ether, methanol, ethanol, propane, naphtha, kerosene and combinations thereof. Note Column 1,lines 23-27 and Column 8, lines 20-25]

However, Holland et al. do not specifically recite that hydrocarbon fuel to be reformed includes applicant's specific odorant as claimed.

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It would have been obvious from reading Holland et al. that the apparatus is fully capable of treating a hydrocarbon containing gas which may or may not include an odorant. The apparatus of Holland et al. includes at least one reforming catalyst bed within the fuel processor which produces a mixed gas stream containing hydrogen gas and other gases from the feed stream and a separation region within the fuel processor to receive the gas stream and separate the mixed gas stream into a hydrogen rich stream containing at least substantially hydrogen gas and a byproduct stream containing at least a substantially portion of the other gases and wherein the product hydrogen stream is formed from the hydrogen rich stream. Holland et al. recognizes that mercaptans and sulfur containing compounds found in conventional hydrocarbon streams which are to be reformed need to include separation means or sulfur removal means in order to prevent poisoning of either the catalyst or fuel cell.[Note Specifically Column 9, line 7, "As will be understood by person skilled in the art...the apparatus may further comprise other steps /components depending on the particular system and configurations...if the fuel used is other than an alcohol or ether, and upstream pre-treatment step for example desulfurization will probably be necessary prior to any catalyst fuel processing step to prevent catalyst poisoning.] The Petroleum Industry standards provide odorants in these fuels, the types of odorants used are those found conventionally in the industry. Applicant is reminded that the examiner reads the claims given its broadest most reasonable interpretation. Applicant is reminded that in claim construction, especially when claiming an apparatus the intended feature of the fuel containing an odorant is not different than any other fuel, because as written the fuel

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processor is "adapted to produce a hydrogen stream containing hydrogen gas from a feed stream containing a carbon containing feedstock, water and an odorant. It is immaterial to the apparatus whether what type of fuel is being used, and whether the fuel contains an odorant as claimed. Applicant must specifically recites a supply of carbon containing feedstock including an odorant which has a different composition than the carbon containing feeds, which imparts an odor distinct from the carbon containing feedstock and is at least substantially free from sulfur compounds said supply is fluidly connected to at least one reforming catalyst, etc. The claim as written with the "adapted to" language is interpreted more broadly and therefore although Holland et al. does not include an odorant per se, the apparatus functions equivalently to what has been claimed by applicant and the apparatus is fully capable of providing a hydrogen stream which includes a carbon containing feedstock not precluding an odorant which imparts an odor or smell distinct from the feedstock. It is maintained that applicant apparatus as claimed is rendered as a whole obvious from the teachings of Holland et al.

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any


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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to N. Bhat whose telephone number is 571-272-1397. The examiner can normally be reached on Monday-Friday, 9:30AM-6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


N. Bhat
Primary Examiner
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